Water management in Ontario

Ontario
Water Resources
Commission

Water Resources
Bulletin 1-2
General series

DATA FOR NORTHERN ONTARIO WATER RESOURCES STUDIES

1968 to 1969

WATER RESOURCES
BULLETIN 1-2
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ONTARIO WATER RESOURCES COMMISSION

DIVISION OF WATER RESOURCES

TORONTO ONTARIO

1970

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INTRODUCTION

In October, 1965, the Prime Minister of Canada and the Premier of Ontario announced that the Governments of Canada and Ontario had agreed to undertake a series of co-ordinated studies of Ontario's northern water resources and related economic development. Provision was made for the establishment of a Co-ordinating Committee representing the two governments to arrange for the exchange of all information gathered in the studies and to avoid duplication or overlapping of effort by the participating agencies. Most of the work is being undertaken in five large river basins draining to Hudson Bay and James Bay. From northwest to southeast these are the Severn, Winisk, Attawapiskat, Albany and Moose River basins.

The Co-ordinating Committee prepared a statement of objective for the studies to be carried out separately by agencies of the two governments, as follows:

"With respect to waters draining into James Bay and Hudson Bay in Ontario, to assess the quantity and quality of water resources for all purposes; to determine present and future requirements for such waters; and to assess alternative possibilities for the utilization of such waters locally or elsewhere through diversions."

The Government of Ontario delegated its part in the hydrologic and engineering aspects of the studies to the Ontario Water Resources Commission. The OWRC Division of Water Resources assigned the Hydrologic Data Branch and the Surveys and Projects Branch to pursue the studies. Ontario's part in the economic aspects of the studies was delegated to the Applied Economics Branch of the Ontario Department of Economics and Development and upon reorganization of some Ontario government departments, to the Economic Planning Branch of the Department of Treasury.

SCOPE OF BULLETIN

This bulletin is limited to the presentation of data gathered by the Ontario Water Resources Commission during 1968 and 1969. Tables and maps are used to present the data and information on streamflows, ground-water levels, snow course data, water quality analyses and hydrogeology. A more complete report will be published at the end of the study and will deal in detail with the interpretation of the data obtained and the significance of the various hydrologic factors to the water resources of northern Ontario.

METHOD OF SURVEY

The activities of the two branches of the Division of Water Resources working in the Northern Ontario Water Resources Studies are described below.

The Hydrologic Data Branch is engaged in the development of hydrometric networks and the gathering of hydrologic data throughout the Ontario portion of the Hudson Bay-James Bay drainage system. The field work of this branch is concentrated upon the measurement of streamflow, rainfall, snowfall, ground-water levels and water quality. Field investigations are carried out to select sites for the installation of observation wells and streamflow gauging stations. Recorders are then installed at these sites for continuous or short term (open water period) measurements. The Branch also provides background information for work of the Surveys and Projects Branch.

The Surveys and Projects Branch normally works in one basin each year and evaluates the hydrologic regime and water quality of the northern river basins. Stream gauging sites are investigated for suitability as stations that will provide runoff data for representative drainage basins. The hydrogeologic conditions in the basins are investigated to determine ground-water availability and quality and to assess their effects on runoff regimes. Water quality tests are made continually. The Surveys and Projects Branch designates points at which data should continue to be collected to support its study of water availability.

The parties operate out of Nakina, Sioux Lookout and Big Trout Lake. Chartered aircraft operating out of these bases are used to fly to the remote areas which could not be reached otherwise. The geologists and scientists use light, fixed-wing aircraft to gather most of their geologic information. Only occasionally were canoes used for geologic exploration.

For the year 1968-1969, the Hydrologic Data Branch worked in the Severn, Winisk, Attawapiskat and Albany river basins with geologic mapping being carried out in the Severn River basin.

The Surveys and Projects Branch worked in the Albany River basin around Nakina and lower sections of the Albany River on permeability studies and in the Severn and Winisk river basins on water quality studies.

FIELD PERSONNEL

The OWRC personnel engaged in Northern Ontario Water Resources Studies field activities during the years 1968-1969 are listed below:

Hydrologic Data Branch	Surveys and Projects Branch
J. Silburn-Engineer-Party Chief	R. Pikula-Engineer-Party Chief
R. Wilkins-Scientist (Geologist)	K. Wang-Geologist
P. Ackermann-Technician	A. Roy-Scientist
D. Hunter-summer student	M. Long-Technician
R. Slaughter-summer student	

EXPLANATION OF DATA PRESENTATION

All data in the tables that follow have been grouped according to the major drainage basins. The following comments explain some of the terms used and methods adopted in the descriptions appearing in the tables.

Locations

Locations are given by latitude and longitude and were determined from scaling the plotted locations on maps. The descriptions are further elaborated by references to stream features such as confluences or lake outlets or nearest settlements.

Drainage Areas

The drainage area of a given streamflow station or measuring point is that area which is enclosed by a topographic divide such that all precipitation that falls on the area will drain past the measuring point or station. Areas were determined from the maps of the National Topographic System at a scale of 1: 250, 000.

Gauges

Where appropriate, types of gauges and brief descriptions of gathering devices are given.

Discharges

Discharges were computed by use of current meters and were measured either by wading or by suspension from a boat. In both cases, the stream was divided into approximately 20 sections so that the discharge in each section did not exceed ten per cent of the total discharge. The velocity was measured in each section and the discharge calculated. The summation of discharges for all sections was a computation of discharge at that section of the stream.

Velocity measurements were taken at 0.2 and 0.8 of the depth of each section and were averaged to give the velocity of the section. In extremely shallow conditions, velocity was measured at 0.6 of the depth from the water surface. Most of the boat measurements were done by use of a tag line which was used to position the boat at the selected section and to steady the boat in the current.

Snow Courses

Snow courses consisting of at least ten sample points spaced 100 feet apart were laid out in the bush so that typical average snow depths could be measured. The snow courses were sampled by a Mount Rose Sampler which involved the taking of a core of snow in a tube, recording the depth of snow, weighing the core and sampler, and calculating the water equivalent from the weight of the core.

Water Quality

Hach kits were employed to analyse samples of water in the field. Selected samples were sent to the Division of Laboratories of the Commission for testing and confirmation of field results. Conductivity meters were used to measure the electrical conductivity of samples in the field.

Sorting Coefficient (S_o)

The sorting coefficient gives an indication of the relative soil size distribution for samples taken at geological sections. It is computed from the results of the sieve analysis curve. It is the square root of the ratio of the third quartile size value over the first quartile size value where the third quartile is the coarser grain size. As S_o approaches unity, the soil samples tend to consist of particles of one size. An S_o value less than 2.5 is accepted as indicating a well-sorted sediment.

Coefficient of Permeability

The coefficient of permeability defines the capability of a porous medium to transmit water. The permeabilities were determined by laboratory tests on disturbed samples which were pre-saturated for 24 hours. The samples were analyzed in two different bulk densities i. e. one portion of each sample was compacted to a higher density. The figures presented are those for the higher bulk density.

Other Sources of Data

It should be noted that the data contained in this report are only those collected by the Ontario Water Resources Commission. Additional data are available from the following agencies:

Streamflow - Inland Waters Branch, Department of Energy, Mines and Resources, Ottawa.

Snowcourse - Meteorology Branch, Department of Transport, Ottawa.

- Ontario Hydro Electric Power Commission, Toronto.

Rainfall - Meteorology Branch, Department of Transport, Ottawa.

- Ontario Department of Lands and Forests, District Headquarters.

Geology - Ontario Department of Mines, Toronto.

- Geological Survey of Canada, Department of Energy, Mines and Resources, Ottawa.

Chemical Analysis of Water - Ontario Department of Lands and Forests, Toronto.

Bathymetric Contours of Lakes - Ontario Department of Lands and Forests, Toronto.

TABLE 1
STREAMFLOW
ALBANY RIVER BASIN
1969

STATION NUMBER: 43-01-003
LOCATION: Albany River at Petawanga Lake Narrows.
51°29'N, 88°25'W.
DRAINAGE AREA: 3,670 sq. miles
GAUGE: Float type - temporary stilling well

DAILY DISCHARGE IN CUBIC FEET PER SECOND										
Day	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1							10,800	11,200		
2							10,900	11,200		
3							11,000	11,200		
4							10,800	11,200		
5							11,000	11,200		
6							11,200	11,200		
7							11,300	11,200		
8							11,400	11,200		
9							11,600	11,300		
10							11,800	11,400		
11							11,800	11,600		
12							11,900	12,100		
13							11,800	12,800		
14				14,000			11,700	13,600		
15							11,600	14,900		
16							11,300	15,900		
17			8,820				11,100			
18							10,800			
19							10,600			
20							10,500			
21						6,220	10,400			
22					5,860	6,800	10,800			
23				9,330		7,600	10,800			
24						8,300				
25						8,700				
26						9,100				
27						9,500	10,800			
28						9,900	10,900			
29						10,200	11,100			
30						10,500	11,100			
31						10,700				

TABLE 2
STREAMFLOW
ALBANY RIVER BASIN
1969

STATION NUMBER: 43-01-023
LOCATION: Balkam Creek, Nakina.
50°11'N, 86°43'W.
DRAINAGE AREA: 22 sq. miles
GAUGE: Rectangular weir and float type recorder

DAILY DISCHARGE IN CUBIC FEET PER SECOND												
Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1								19	17	21		
2									17	23		
3									13	24		
4									13	24		
5									13	26		
6								29	15	27		
7								34	15	28		
8								35	15	29		
9								35	13	30		
10								33	13	32		
11								31	13	33		
12								32	13	33		
13								34	13	33		
14								35	12			
15								43	13			
16								44	12			
17								44	12			
18								46	12			
19								50	12			
20								49	12			
21								47	12			
22								43	12			
23								40	13			
24								36	13			
25								33	13			
26												
27								29	13			
28								26	13			
29								24	13			
30								22	17			
31								20	17			
								18				

TABLE 3
STREAMFLOW
ALBANY RIVER BASIN
1969

STATION NUMBER: 43-01-008
LOCATION: Cat River at outflow of Wesleyan Lake.
51°11'N, 91°36'W.
DRAINAGE AREA: 2,080 sq. miles
GAUGE: Float type - temporary stilling well

DAILY DISCHARGE IN CUBIC FEET PER SECOND												
Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1										3,950		
2										3,990		
3										4,060		
4										4,190		
5												
6												
7												
8												
9								3,350				
10								3,310				
11								3,260				
12								3,220				
13								3,200				
14							3,910	3,190				
15								3,150				
16								3,140	2,950			
17						3,440			2,960			
18						3,230			2,980			
19						3,270			2,980			
20					1,750				3,060			
21									3,190			
22									3,240			
23									3,260			
24									3,310			
25									3,420			
26									3,560			
27									3,620			
28									3,760			
29									3,850			
30									3,900			
31												

TABLE 4
STREAMFLOW
ALBANY RIVER BASIN
1969

STATION NUMBER: 43-01-011
LOCATION: Eabamet River at outlet of Eabamet Lake.
51°31'N, 87°45'W.
DRAINAGE AREA: 820 sq. miles
GAUGE: Float type - temporary stilling well

DAILY DISCHARGE IN CUBIC FEET PER SECOND												
Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1							2,450		1,140			
2							2,420		1,160			
3							2,410		1,200			
4							2,430		1,240			
5							2,430		1,240			
6							2,420		1,280			
7							2,400		1,310			
8							2,370		1,330			
9							2,350		1,340			
10							2,350		1,370			
11							2,330		1,400			
12							2,280		1,440			
13							2,240		1,470			
14							2,250		1,510			
15							2,240		1,570			
16							2,210		1,600			
17					2,920		2,200		1,580			
18							2,220		1,600			
19									1,580			
20									1,570			
21									1,560			
22							2,330	860	1,560			
23						3,330		850	1,640			
24								840	1,670			
25								890	1,700			
26						2,470		910				
27						2,490		920				
28						2,510		960				
29						2,500		1,030				
30						2,480		1,080				
31								1,120				

TABLE 5
STREAMFLOW
ALBANY RIVER BASIN
1969

STATION NUMBER: 43-01-012
LOCATION: Flint River at CNR Pagwa Line Crossing.
50°03'N, 85°37'W.
DRAINAGE AREA: 215 sq. miles
GAUGE: Float type - temporary stilling well

DAILY DISCHARGE IN CUBIC FEET PER SECOND												
Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1						940	390					
2						840	385					
3						740	350					
4						755	335					
5							315					
6							305					
7							300					
8					980		285					
9					995		270					
10					940		255					
11					930		245					
12					900	589	230					
13					895	555	215					
14					900	520	210					
15					960	495						
16					1,000	495						
17					940	505						
18					930	600						
19					865	580						
20					830	595	219					
21					790	565						
22					750	520						
23					730	495						
24					720	465						
25					735	445						
26					685	425						
27					670	405						
28					640	410						
29					565	400						
30					640	390						
31					905							

TABLE 6
STREAMFLOW
ALBANY RIVER BASIN
1969

STATION NUMBER: 43-01-013
LOCATION: Kawashkagama River 2,000 feet upstream from O'Sullivan Lake. 50°26'N, 87°09'W.
DRAINAGE AREA: 765 sq. miles
GAUGE: Float type - temporary stilling well

DAILY DISCHARGE IN CUBIC FEET PER SECOND												
Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1									980			
2									960			
3									960			
4									960			
5									960			
6									960			
7					2, 150			1, 380	960			
8					2, 160			1, 300	960			
9					2, 200			1, 280				
10					2, 290			1, 270				
11					2, 290	4, 030		1, 220				
12					2, 170	3, 960		1, 220				
13					2, 140			1, 200				
14					2, 080			1, 190				
15					2, 150			1, 200				
16					2, 180			1, 200				
17					2, 200			1, 200				
18					2, 200			1, 280				
19					2, 220			1, 300				
20					2, 180			1, 300				
21					2, 120			1, 300				
22					2, 070	2, 240		1, 280				
23					2, 050			1, 260				
24					1, 980			1, 220				
25					1, 940			1, 190				
26					1, 880			1, 160				
27					1, 880			1, 140				
28					1, 780			1, 120				
29					1, 760			1, 080				
30					1, 700			1, 060				
31					1, 900			1, 020				

TABLE 7
STREAMFLOW
ALBANY RIVER BASIN

STATION NUMBER: 43-01-017
LOCATION: Moberley Lake Narrows (Brightsand River).
49°36'N, 90°34'W.
DRAINAGE AREA: 450 sq. miles
GAUGE: Float type - temporary stilling well

DAILY DISCHARGE IN CUBIC FEET PER SECOND												
Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1							870	520	410	320		
2							870	510	390	320		
3							860	500	380	330		
4							860	490	370	340		
5							860	470	360	340		
6							850	470	350	350		
7							830	470	340	360		
8							820	450	330	370		
9							810	450	320	370		
10							790	450		380		
11							770	440		380		
12							750	470		380		
13							740	530		380		
14							718	550		370		
15							720	560		360		
16						966	720	570	260	360		
17						920	710	600	250	350		
18						910	710	610	240	340		
19						910	700	620	240			
20					868	900	690	620	230			
21						890	680	610	220			
22						870	670	590	240			
23						850	630	580	260			
24						830	620	560	270			
25						810	610	540	270			
26						810	600	520	280			
27						830	580	500	280			
28						850	560	480	290			
29						870	550	470	300			
30						870	540	440	310			
31							530	420				

TABLE 8
STREAMFLOW
ALBANY RIVER BASIN
1969

STATION NUMBER: 43-01-020
LOCATION: Opichuan River at Kellow Lake Narrows.
51°10'N, 87°46'W.
DRAINAGE AREA: 440 sq. miles
GAUGE: Float type - temporary stilling well

DAILY DISCHARGE IN CUBIC FEET PER SECOND

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1							225	910	755	685		
2							220	910	725	720		
3							210	875	710	725		
4							225	860	765	735		
5							250	870	775	740		
6							275	840	765	750		
7							280	840	815	765		
8							295	840	860	765		
9							300	815	875	745		
10							375	765	875	740		
11							380	725	875	745		
12							340	695	870	745		
13							370	695	850	740		
14						2,180	390	715	825	725		
15							410	695	815	725		
16							450	685	800	715		
17					1,300		495	670	800	690		
18							545	645	775	675		
19							620	710	745	650		
20							690	725	715	640		
21							765	735	675	625		
22							850	745	660	600		
23							970	755	660	575		
24							1,060	775	675	565		
25							1,100	775	670	550		
26						300	1,060	765	660	515		
27						300	1,000	735	628	500		
28						300	970	745	675	495		
29						275	920	735	675	475		
30						250	840	775	690			
31							910	755				

TABLE 9
STREAMFLOW
ALBANY RIVER BASIN
1969

STATION NUMBER: 43-01-021
LOCATION: Pashkokogan River 1.5 miles downstream from outflow of Pashkokogan Lake.
DRAINAGE AREA: 875 sq. miles
GAUGE: Float type - temporary stilling well

DAILY DISCHARGE IN CUBIC FEET PER SECOND											
Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1							1,890	1,500	1,290	1,250		
2							1,890	1,480	1,280	1,250		
3							1,850	1,460	1,280	1,260		
4							1,780	1,440	1,280	1,260		
5							1,800	1,410	1,260	1,310		
6							1,770	1,390	1,320	1,330		
7							1,760	1,440	1,310	1,330		
8							1,760	1,330	1,320	1,320		
9							1,780	1,350	1,320	1,270		
10							1,760	1,340		1,330		
11							1,740	1,340		1,340		
12							1,720	1,310		1,340		
13							1,720	1,350		1,380		
14							1,800	1,360		1,350		
15							1,790	1,320		1,340		
16						2,090	1,770	1,290	1,270	1,350		
17						1,960	1,720	1,290	1,280	1,360		
18						1,960	1,680	1,340	1,280	1,320		
19						1,960	1,670	1,350	1,290			
20					1,190	1,940	1,660	1,360	1,250			
21						1,920	1,640	1,370	1,260			
22						1,900	1,620	1,370	1,230			
23						1,880	1,630	1,350	1,240			
24						1,850	1,630	1,350	1,230			
25						1,830	1,610	1,340	1,240			
26						1,800	1,590	1,350	1,250			
27						1,840	1,570	1,340	1,250			
28						1,850	1,550	1,340	1,250			
29						1,880	1,530	1,380	1,260			
30						1,850	1,520	1,380	1,240			
31							1,500	1,290				

TABLE 10
STREAMFLOW
SEVERN RIVER BASIN
1969

STATION NUMBER: 47-01-003
LOCATION: Flanagan River at Northwind Lake Dam.
52°49'N, 93°27'W.
DRAINAGE AREA: 1,063 sq. miles
GAUGE: Pressure bulb type. Flows estimated from Sept. 7 to Nov. 16

DAILY DISCHARGE IN CUBIC FEET PER SECOND												
Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	855					1,560	1,590	1,600	2,080	3,130	2,920	
2	840					1,580		1,580	2,120	3,180	2,860	
3	815					1,590		1,560	2,140	3,240	2,810	
4	785					1,600		1,540	2,180	3,290	2,800	
5	765					1,590		1,520	2,200	3,375	2,790	
6	750					1,580		1,500	2,230	3,450	2,740	
7	740					1,580		1,500	2,250	3,515	2,680	
8	725					1,560		1,520	2,330	3,560	2,640	
9	720					1,560		1,550	2,390	3,630	2,615	
10	715					1,560	1,780	1,550	2,430	3,660	2,580	
11	705						1,800	1,540	2,450	3,710	2,550	1,460
12	690							1,560	2,470	3,760	2,500	1,410
13	675						1,760	1,590	2,480	3,750	2,470	1,320
14	675						1,740	1,580	2,490	3,760	2,360	1,300
15	665						1,720	1,680	2,480	3,760	2,330	1,260
16	645						1,720	1,810	2,500	3,730	2,250	1,240
17	640						1,750	1,840	2,470	3,720	2,220	1,200
18	630					1,590	1,720	1,880	2,470	3,680	2,190	1,140
19	620					1,600	1,710	1,920	2,490	3,590	2,140	1,120
20	615					1,600	1,710	1,930	2,460	3,540	2,090	1,110
21	605						1,710	1,960	2,520	3,470	2,020	1,060
22	590				1,450		1,700	1,960	2,570	3,410		1,040
23	565				1,450		1,700	1,930	2,630	3,330		1,020
24	555				1,470	1,540	1,700	1,960	2,740	3,260		980
25	550				1,49	1,520	1,700	1,970	2,810	3,240		970
26					1,480	1,540	1,690	1,970	2,860	3,190		965
27					1,490	1,540	1,660	1,980	2,920	3,150		935
28					1,490	1,550	1,660	2,000	2,980	3,090		915
29					1,500	1,550	1,640	2,030	3,040	3,040		895
30					1,540	1,560	1,630	2,020	3,080	2,990		880
31					1,540		1,610	2,060		2,950		

TABLE 11
STREAMFLOW
SEVERN RIVER BASIN

STATION NUMBER: 47-01-006
LOCATION: Morrison River at Sachigo Lake.
53°48'N, 91°50'W.
DRAINAGE AREA: 259 sq. miles
GAUGE: Float type - temporary stilling well

DAILY DISCHARGE IN CUBIC FEET PER SECOND												
Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1							225		75	175		
2							222		68	180		
3							217		68	192		
4							195		75	195		
5							165			198		
6							155			203		
7							145			205		
8							137			205		
9							153			207		
10							147			198		
11							137	154		195		
12							135	153		190		
13							135	154		185		
14							110	140				
15							91	137				
16							75	143				
17							50	150				
18							40	136				
19							37	145	108			
20							29	145	110			
21						283	25	135	110			
22						292	20	128	123			
23						285	22	109	124			
24						253	16	96	133			
25						260		100	140			
26						237		100	147			
27						237		80	153			
28						205		76	160			
29						205		80	170			
30						213		80	175			
31								75				

TABLE 12
STREAMFLOW
SEVERN RIVER BASIN
1969

STATION NUMBER: 47-01-007
LOCATION: Sachigo River 9 miles downstream from Sachigo Lake.
54°05'N, 92°08'W.
DRAINAGE AREA: 1,610 sq. miles
GAUGE: Float type - temporary stilling well

DAILY DISCHARGE IN CUBIC FEET PER SECOND												
Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1							1,580	1,220	1,310			
2							1,580	1,240	1,270			
3							1,540	1,210	1,320			
4							1,550	1,180	1,260			
5							1,580	1,220	1,460			
6							1,580	1,140	1,530			
7							1,580	1,080	1,580			
8							1,590	1,170	1,670			
9							1,550	1,220	1,720			
10							1,560	1,220				
11							1,580	1,180				
12							1,580	1,190				
13							1,560	1,350				
14							1,560	1,240				
15							1,510	1,260				
16							1,430	1,280				
17							1,480	1,320				
18							1,420	1,320	2,180			
19						1,560	1,400	1,360				
20						1,580	1,400	1,360				
21					1,560	1,580	1,410	1,360				
22						1,580	1,420	1,340				
23						1,580	1,380	1,320				
24						1,580	1,340	1,280				
25						1,550	1,350	1,360				
26						1,540	1,320	1,320				
27						1,550	1,320	1,310				
28						1,580	1,320	1,290				
29						1,540	1,320	1,380				
30						1,580	1,220	1,220				
31							1,250	1,320				

TABLE 13
STREAMFLOW
SEVERN RIVER BASIN
1969

STATION NUMBER: 47-01-008
LOCATION: Sachigo River 9 miles upstream from Sachigo Lake. 53°42'N, 92°17'W.
DRAINAGE AREA: 779 sq. miles
GAUGE: Float type - temporary stilling well

DAILY DISCHARGE IN CUBIC FEET PER SECOND												
Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1							690	360				
2							675	370				
3							640	345				
4							595	315				
5							570	280				
6							530	260				
7							495	255				
8							470	455				
9							500	710				
10							570	785				
11							605	790				
12							595	851				
13							570	840				
14							520	940				
15							485	1,080				
16							448	1,150				
17							410	1,180	1,260			
18							365	1,180	1,230			
19							335	1,120	1,180			
20							305	1,010	1,120			
21					1,050	636	300	930	1,070			
22						660	315		1,260			
23						620	385		2,000			
24						610	430					
25						590	465					
26						600	455					
27						595	440					
28						570	405					
29						595	370					
30						670	340					
31							335					

TABLE 14
STREAMFLOW
SEVERN RIVER BASIN
1969

STATION NUMBER: 47-01-009
LOCATION: Schade River one mile downstream from Misiwaweya Lake. 53°33'N, 91°09'W.
DRAINAGE AREA: 1,170 sq. miles
GAUGE: Float type until Aug. 29, pressure bulb type from Aug. 29 to Sept. 23.

DAILY DISCHARGE IN CUBIC FEET PER SECOND

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1								855	610			
2								845	610			
3								825	660			
4								810	660			
5								795	765			
6								780	820			
7								800	820			
8								785	820			
9								775	820			
10								770	880			
11								765	880			
12								755	945			
13								718	945			
14								730	1,010			
15								710	1,075			
16							1,200	705	1,140			
17							1,090	700	1,255			
18							1,200	705	1,290			
19							1,090	710	1,305			
20						1,270	1,080	710	1,405			
21												
22							1,070	710	1,535			
23							1,080	705	1,690			
24							1,080	690	1,820			
25					1,400		1,050	680				
							1,020	695				
26												
27							1,010	715				
28							990	705				
29							970	690				
30							950	620				
31							935	710				
							890	610				

TABLE 15
STREAMFLOW
ALBANY RIVER BASIN

STATION				DRAINAGE AREA	DISCHARGE	
Name and Description	Number	Lat. N.	Long. W.	sq. miles	Date	cfs
Balkam Creek at bridge on Cordingly Lake Rd.	43-01-006	50°11'	86°43'	29.5	May 11/69	122
					May 18/69	91
					July 5/69	37
Balkam Creek at bridge on Kimberly Clark Rd.	43-01-007	50°11'	86°43'	42.8	May 11/69	188
					May 18/69	149
Cheepay River near confluence with the Albany R.	43-01-009	51°27'	83°26'	1,335	July 5/69	5470
					July 25/69	1455
					Aug. 24/69	335
Kenogami River below confluence with Little Current River	43-01-015	50°58'	84°36'	17,620	June 15/69	52,340
					July 3/69	44,665
					Sept. 2/69	12,675
Muswabik River at outlet of Muswabik Lake	43-01-018	51°32'	85°05'	730	July 5/69	3,440
					July 25/69	830
					Aug. 24/69	530

NOTE: All discharges were obtained by the current meter method unless designated by the following subscripts.

r - automatic stage recorder
s - staff gauge

TABLE 16
STREAMFLOW
SEVERN RIVER BASIN

STATION				DRAINAGE AREA	DISCHARGE	
Name and Description	Number	Lat. N.	Long. W.	sq. miles	Date	cfs
Severn River one mile upstream from Limestone Rapids	47-01-011	55°23'	88°19'	35, 880	May 23/69 June 22/69 July 15/69 Aug. 11/69	38, 915 34, 240 30, 120 26, 275

NOTE: All discharges were obtained by the current meter method unless designated by the following subscripts.

r - automatic stage recorder
s - staff gauge

TABLE 17
SNOW COURSE DATA
1968/1969 Season

EQUIPMENT: Mount Rose Snow Sampler, 10 point snow course

Basin	Albany		Albany		Attawapiskat		Attawapiskat		Severn		Winisk	
Station Number	43-03-001		43-03-002		44-03-001		44-03-002		47-03-001		46-03-001	
Station Location	Nakina		Ogoki		Attawapiskat		Pickle Lake		Sandy Lake		Winisk	
Elevation	1000		550		20		1450		1000		20	
Latitude N.	50°12'		51°08		52°56'		51°27'		53°03'		55°16'	
Longitude W.	86°42'		85°58'		82°25'		90°12'		93°15'		85°12'	
Date	Snow Depth (in.)	Water Equiv. (in.)	Snow Depth (in.)	Water Equiv. (in.)	Snow Depth (in.)	Water Equiv. (in.)	Snow Depth (in.)	Water Equiv. (in.)	Snow Depth (in.)	Water Equiv. (in.)	Snow Depth (in.)	Water Equiv. (in.)
December 1/68					5.7	0.5			7.9	2.4		
December 15/68	17.3	2.3			15.4	2.4			11.3	1.9		
January 1/69	21.3	3.7	15.4	2.9	21.7	3.7	18.3	1.6	16.8	3.4	15.5	2.9
January 15/69	22.1	4.3	30.2	4.9	22.9	4.4	21.8	3.0	21.6	3.1	21.5	4.7
February 1/69	38.5	6.6	37.3	6.4	37.2	7.7	45.0	8.8	22.6	3.0	23.7	5.4
February 15/69	37.7	8.2	31.8	7.6	37.3	8.9	35.9	9.5	22.4	2.9	23.1	6.1
March 1/69	32.6	8.0	32.5	7.4	36.8	8.9	34.2	9.5	22.3	3.8	26.2	6.6
March 15/69	32.3	8.6	32.1	7.1	36.9	9.4	32.3	9.5	26.9	5.3		
April 1/69	32.7	8.2	31.0	7.1	34.9	9.2	31.6	9.1	20.8	2.1		
April 15/69	14.9	4.9	24.4	4.1	16.6	6.2	16.5	4.8	3.1	1.0		
May 1/69	.6	.2			18.5	7.2	nil	nil	nil	nil		
May 15/69	nil	nil			1.9	0.9						

TABLE 18
MECHANICAL ANALYSES OF OVERBURDEN SAMPLES
ALBANY RIVER BASIN

LOCATION			Sample No.	FIELD DESCRIPTION	Depth Below Surface (feet)	Per Cent by Wt.				So	Coeff. of Perm. (cm/sec.)
Latitude North	Longitude West	Field Location				Clay	Silt	Sand	Gravel		
51°39'	85°29'	south shore, Albany R., ½ mile below Gander R.	RW68-2	silt till	4	←	39	61	→		
51°39'	85°29'	south shore, Albany R., ½ mile below Gander R.	RW68-3	silt clay till	6	←		30	70	2.56	
51°39'	85°29'	south shore, Albany R., ½ mile below Gander R.	RW68-4	silt till	30	1	36	42	21	4.39	
51°39'	85°28'	south shore, Albany R., 1 mile below Gander R.	RW68-5	silt till	10	←	58	42	→		
51°39'	85°28'	south shore, Albany R., 1 mile below Gander R.	RW68-7	silt	25	1	66	33		1.32	
51°55'	82°38'	west end of island in Albany R.	RW68-20	silt clay till	45	22	40	28	10	4.00	0.88×10^{-7}

TABLE 18 (continued)
MECHANICAL ANALYSES OF OVERBURDEN SAMPLES
ALBANY RIVER BASIN

LOCATION			Sample No.	FIELD DESCRIPTION	Depth Below Surface (feet)	Per Cent by Wt.				So	Coeff. of Perm. (cm/sec.)
Latitude North	Longitude West	Field Location				Clay	Silt	Sand	Gravel		
51°57'	82°32'	island in Albany R.	RW68-22	silt clay till	20	18	48	33	1	1.73	0.27×10^{-7}
51°57'	82°32'	island in Albany R.	RW68-23	silt till	40	2	45	37	16	4.31	1.4×10^{-7}
52°06'	82°12'	south shore, Albany R. 1 mile below Biglow Cr.	RW68-25	silt till	22	10	42	36	12	1.71	6.1×10^{-8}
52°06'	82°12'	south shore, Albany R. 1 mile below Biglow Cr.	RW68-24	silt clay till	4	17	42	33	8	4.47	5.7×10^{-7}
50°56'	84°41'	south shore, Little Current R.	RW68-26	silt clay till	20	21	44	26	9	5.92	1.1×10^{-7}
50°56'	84°41'	south shore, Little Current R.	RW68-27	silt clay till	15	20	43	28	9	5.5	1.1×10^{-7}
50°56'	84°44'	north shore, Little Current R.	RW68-28	gravels	30	←		35	65	2.58	3.7×10^{-2}

TABLE 18 (continued)
MECHANICAL ANALYSES OF OVERBURDEN SAMPLES
ALBANY RIVER BASIN

LOCATION			Sample No.	FIELD DESCRIPTION	Depth Below Surface (feet)	Per Cent by Wt.				So	Coeff. of Perm. (cm/sec.)
Latitude North	Longitude West	Field Location				Clay	Silt	Sand	Gravel		
50°23'	84°21'	3 miles above Mammamattawa on Kenogami R.	RW68-30	silt clay till	18	16	57	22	5	1.39	6.4×10^{-8}
50°07'	84°11'	west shore, Kabinakagami R.	RW68-31	sand	30	←	7	93	→	1.35	0.02×10^{-2}
51°09'	85°48'	north bank, Albany River.	AL-3	silt till	10	5	45	28	22	5.34	1.7×10^{-7}
51°26'	85°08'	south bank, Albany River.	AL-21	clay till	5	23	45	21	11	5.68	1.4×10^{-7}
51°24'	85°02'	south bank, Albany River.	AL-24	well graded sand with gravel (horizontal sampling)	5	5	38	40	17	2.21	2.4×10^{-4}
51°24'	85°02'	south bank, Albany River.	AL-24-1	well graded sand with gravel (vertical sampling)	5	10	58	34	→	3.03	3.1×10^{-5}

TABLE 18 (continued)
MECHANICAL ANALYSES OF OVERBURDEN SAMPLES
ALBANY RIVER BASIN

LOCATION			Sample No.	FIELD DESCRIPTION	Depth Below Surface (feet)	Per Cent by Wt.				So	Coeff. of Perm. (cm/sec.)
Latitude North	Longitude West	Field Location				Clay	Silt	Sand	Gravel		
50°12'	84°48'	north bank, Albany River.	AL-31	silt till	3	2	48	32	18	4.19	$4x10^{-7}$
51°15'	84°14'	north bank, Albany River.	AL-41	clay till	5	18	25	52	5	7.17	$1x10^{-6}$
51°16'	84°10'	north bank, Albany River.	AL-42	varved silt and clay lacustrine deposit	5	10	89	1		1.24	$2.1x10^{-7}$
51°29'	83°27'	south side, Ghost River Is.	AL-55	silty clay lacustrine deposit	3	10	78	12		1.69	$5x10^{-8}$
51°33'	83°21'	north bank, Albany River.	AL-58	well graded sand with gravel	10	←		62	38	2.28	$1.1x10^{-2}$
51°42'	83°12'	west side, Black Bear Is.	AL-60-1	silt, fine sand lacustrine deposit	3	12	62	26		2.20	$1.5x10^{-6}$
51°42'	83°12'	west side, Black Bear Is.	AL-60-2	fine to med. sand	5	5	42	53		2.69	$0.43x10^{-4}$

TABLE 18 (continued)
MECHANICAL ANALYSES OF OVERBURDEN SAMPLES
ALBANY RIVER BASIN

LOCATION			Sample No.	FIELD DESCRIPTION	Depth Below Surface (feet)	Per Cent by Wt.				So	Coeff. of Perm. (cm/sec.)
Latitude North	Longitude West	Field Location				Clay	Silt	Sand	Gravel		
51°42'	83°12	west side, Black Bear Is.	AL-60-3	well graded sand with gravel	8	←	3	13	84	1.96	4.3×10^{-2}
51°55'	82°54'	west side, Fishing Creek Is.	AL-65	clay till	16	22	46	22	10	5.77	0.67×10^{-7}
51°57'	82°33'	south bank, Albany River.	AL-68	well graded sand with gravel	5	←	3	51	46		0.14×10^{-2}
52°09'	82°00'	south west side of island	AL-75-2	well graded sand with gravel	3	3	11	34	52	7.77	1.6×10^{-3}
49°48'	84°01'	Hwy. 11 near Carey Lake.	Hwy-1	silt till	2	5	79	16		1.77	3.1×10^{-5}
49°48'	84°01'	¼ mile north of St. Joseph Lake.	Hwy-3	sand and gravel poorly sorted	2	4	25	55	16	3.01	0.5×10^{-4}
49°45'	84°20'	by Hwy. 11 about 4 miles west of Forde Lake.	Hwy-39-1	clay till	1	16	55	24	5	1.19	

TABLE 18 (continued)
MECHANICAL ANALYSES OF OVERBURDEN SAMPLES
ALBANY RIVER BASIN

LOCATION			Sample No.	FIELD DESCRIPTION	Depth Below Surface (feet)	Per Cent by Wt.				So	Coeff. of Perm. (cm/sec.)
Latitude North	Longitude West	Field Location				Clay	Silt	Sand	Gravel		
49°45'	84°20'	by Hwy. 11 four miles west of Forde Lake.	Hw-39-2	silty fine sand lacustrine deposit	4	←	12	88		1.30	
49°45'	84°20'	by Hwy. 11 four miles west of Forde Lake.	Hw-39-3	sand, gravel and boulders poorly sorted	10	←	1	71	28	1.94	
49°45'	84°14'	1 mile east of Forde Lake.	Hw-46	silty sand, lacustrine deposit	2	4	76	20		1.70	2.7×10^{-5}
49°47'	84°08'	south east of Constance Lake.	Hwy-49	clay till	6	16	48	28	8	4.50	4.1×10^{-7}
49°29'	84°45'	north of Nagagamisis L.	Hwy-65-1	silty fine sand lacustrine deposit	2	←	2	98		1.38	0.14×10^{-2}
49°29'	84°45'	north of Nagagamisis L.	Hwy-65-2	sand, gravel and boulders, esker deposit	5			80	20	1.97	0.18×10^{-2}

TABLE 18 (continued)
MECHANICAL ANALYSES OF OVERBURDEN SAMPLES
ALBANY RIVER BASIN

LOCATION			Sample No.	FIELD DESCRIPTION	Depth Below Surface (feet)	Per Cent by Wt.				So	Coeff. of Perm. (cm/sec.)
Latitude North	Longitude West	Field Location				Clay	Silt	Sand	Gravel		
49°37'	84°17'	south of Nassau L	Hwy-85	sand, gravel and boulders, esker deposit	5			69	31	2.26	0.87×10^{-2}
49°47'	84°47'	Hwy. 11 near Pitopiko River.	Hwy-92	silt, clay till	3	25	60	11	4	2.67	2.8×10^{-7}
49°47'	85°06'	½ mile east of confluence of Mistake R. Pagwachuan R.	Hwy-93	silty fine sand lacustrine deposits	2	3	47	50		1.52	2×10^{-4}
49°51'	84°32'	1/10 of a mile north west of confluence of Nagagami River and Shekak River.	Hy-99	clay till	2	27	43	29	1	4.66	3.4×10^{-8}
49°47'	84°08'	south east side of Constance L.	Hwy-49-3	silty fine sand, lacustrine deposit	8	6	78	16		1.55	5.7×10^{-5}

TABLE 18 (continued)
MECHANICAL ANALYSES OF OVERBURDEN SAMPLES
ALBANY RIVER BASIN

LOCATION			Sample No.	FIELD DESCRIPTION	Depth Below Surface (feet)	Per Cent by Wt.				So	Coeff. of Perm. (cm/sec.)
Latitude North	Longitude West	Field Location				Clay	Silt	Sand	Gravel		
49°47'	84°51'	1/5 mile north of confluence of Bad R. and Fraser R.	Hwy-102	silty fine sand lacustrine deposit	3	2	22	76		1.62	1.6×10^{-4}
50°59'	84°38'	west side of Kenogami River.	K-2-3	silty fine sand	15	4	40	56		1.44	1.2×10^{-4}
50°57'	84°80'	south bank of Little Current R.	L-2	silt till	3	12	43	31	14	5.56	3.1×10^{-6}
50°58'	84°41'	north bank of Little Current R.	L-5-1	silt clay till	3	18	46	28	12	6.06	
50°58'	84°41'	north bank of Little Current R.	L-5-2	well graded sand and gravel beach deposit	5			20	80	1.83	
50°55'	84°46'	south bank of Little Current R.	L-9-2	silt till	3	6	70	20	4	1.87	
50°40'	85°36'	north bank, Albany River	WBB-1	silt clay till	1	16	42	28	14	2.63	6.3×10^{-7}

TABLE 18 (continued)
MECHANICAL ANALYSES OF OVERBURDEN SAMPLES
ALBANY RIVER BASIN

LOCATION			Sample No.	FIELD DESCRIPTION	Depth Below Surface (feet)	Per Cent by Wt.				So	Coeff. of Perm. (cm/sec.)
Latitude North	Longitude West	Field Location				Clay	Silt	Sand	Gravel		
50°40'	85°36'	north bank, Albany River.	WBB-2	silt clay till	5	18	37	25	20	1.34	3.2×10^{-6}
50°40'	85°36'	north bank, Albany River.	WB-C-2	poorly sorted sand and gravel, end moraine deposit	5		82		18	1.51	9.3×10^{-2}
50°40'	85°36'	north bank, Albany River.	WB-C-3	poorly sorted sand and gravel, end moraine deposit	7	6	45	27	21	7.45	1.4×10^{-5}
51°51'	89°36'	O'Sullivan Lake well site 43-05-001R.	RW69-1	varved clay and silt	4	4	51	45		4.22	
51°51'	89°36'	O'Sullivan Lake well site 43-05-001R.	RW69-2	varved clay and silt	2	25	49	26		4.12	

TABLE 19
MECHANICAL ANALYSES OF OVERBURDEN SAMPLES
SEVERN RIVER BASIN

LOCATION			Sample No.	FIELD DESCRIPTION	Depth Below Surface (feet)	Per Cent by Wt.				So	Coeff. of Perm. (cm/sec.)
Latitude North	Longitude West	Field Location				Clay	Silt	Sand	Gravel		
53°18'	93°48'	south shore, Angekum Lake.	RW69-3	varved clay and silt	5	22	47	25	6	4.59	
53°31'	93°47'	north shore, Warwick Lake.	RW69-4	lacustrine clay and silt	3	34	47	17	2	3.16	
55°12'	88°27'	west shore, Severn River.	RW69-5	massive silt and very fine sand	4	39	48	13		2.80	

TABLE 20
DESCRIPTIONS OF MEASURED GEOLOGIC SECTIONS
SEVERN RIVER BASIN

LOCATION			Field No.	Depth Below Surface (feet)	DESCRIPTION
Latitude North	Longitude West	Field Location			
53°18'	93°48'	south shore, Angikum Lake.	Se 2	0-¼	organic material, roots, decomposed leaves, peat.
				¼-15	varved clays; coarse material is light brown fine sand, fine material is dark brown clay.
				15-30	varved clays; coarse material is blue-grey silt, fine material is buff clay.
54°29'	89°23'	north shore, Severn River.	Se 3	0-¼	organic material, roots, decomposed leaves, peat.
				¼-45	dense light brown silt till.
				45-60	slump material.
54°52'	88°58'	north shore, Severn River.	Se 4	0-½	organic material, roots, decomposed leaves, peat.
				½-55	brown silt till, white silt lense two feet from the top, gravel lenses approximately half way down the section.
				55-70	dark blue-grey silt till.
55°12'	88°27'	west shore, Severn River.	Se-5	0-¼	organic material, roots, decomposed leaves, peat.
				¼-8	horizontally bedded silt and fine sand.
				8-14	medium gravel to medium sand with marine shells.
				14-39	silty clay.
				39-70	silty brown till.

TABLE 20 (continued)
DESCRIPTIONS OF MEASURED GEOLOGIC SECTIONS
SEVERN RIVER BASIN

LOCATION			Field No.	Depth Below Surface (feet)	DESCRIPTION
Latitude North	Longitude West	Field Location			
53°03'	93°20'	Sandy Lake village.	Se 6	0-$\frac{1}{4}$	organic material, decomposed leaves.
				$\frac{1}{4}$-30	light brown massive clay silt.
				30	bedrock.
55°05'	88°58'	confluence of Severn and Sachigo rivers.	Se 7	0-$\frac{1}{4}$	organic material, grass roots, decomposed leaves.
				$\frac{1}{4}$-6	buff coloured silt with very fine sand with lenses of clay.
				6-8	fine to coarse gravel.
				8-10	brown clay.
				10-35	slump material and recent alluvium.

TABLE 20 (continued)
DESCRIPTIONS OF MEASURED GEOLOGIC SECTIONS
SEVERN RIVER BASIN

LOCATION			Field No.	Depth Below Surface (feet)	DESCRIPTION
Latitude North	Longitude West	Field Location			
55°07'	89°57'	north shore, Sachigo River.	Sa 2	0-$\frac{1}{2}$	organic material, roots, decomposed leaves, peat.
				$\frac{1}{2}$-15	brown silt till.
				15-20	slump material.
55°07'	89°54'	north shore, Sachigo River.	Sa 3	0-$\frac{1}{4}$	organic material, roots, decomposed leaves, peat.
				$\frac{1}{4}$-3$\frac{1}{4}$	brown massive silt.
				3$\frac{1}{4}$-30	all size ranges of sand and gravel.
				30-40	slump material, recent alluvium.
55°06'	89°50'	north shore, Sachigo River.	Sa 4	0-$\frac{1}{2}$	organic material, roots, leaves, peat.
				$\frac{1}{2}$-10	horizontally bedded coarse sand to coarse gravel with some cobbles and boulders.
				10-20	massive very fine sand.
				20-25	recent alluvium.
55°03'	89°47'	north shore, Sachigo River.	Sa 5	0-$\frac{1}{4}$	organic material, roots, decomposed leaves.
				$\frac{1}{4}$-3	discontinuous coarse gravel lense.
				3-25	light brown clay silt till.
				25-40	blue-grey clay silt till; gradational contact between this unit and unit above.

TABLE 20 (continued)
DESCRIPTIONS OF MEASURED GEOLOGIC SECTIONS
SEVERN RIVER BASIN

LOCATION			Field No.	Depth Below Surface (feet)	DESCRIPTION
Latitude North	Longitude West	Field Location			
55°01'	89°45'	south shore, Sachigo River.	Sa 6	0-$\frac{1}{4}$ $\frac{1}{4}$-25	organic material, decomposed leaves, peat. silt to very fine sand with gravel lenses.
55°01'	89°39'	south shore, Sachigo River.	Sa 7	0-$\frac{1}{4}$ $\frac{1}{4}$-4 4-32 32-35	organic material, decomposed leaves, roots, peat. cross-bedded coarse gravel. cross-bedded fine sand. recent alluvium.
54°58'	89°30'	north shore, Sachigo River.	Sa 8	0-$\frac{1}{4}$ $\frac{1}{2}$-12 12-20 20-25	organic material, decomposed leaves, peat. brown massive silt. heterogeneous deposit of fine gravels to cobbles. recent alluvium.

TABLE 20 (continued)
DESCRIPTIONS OF MEASURED GEOLOGIC SECTIONS
SEVERN RIVER BASIN

LOCATION			Field No.	Depth Below Surface (feet)	DESCRIPTION
Latitude North	Longitude West	Field Location			
53°06'	95°08'	south shore, Cobham River.	Co 1	0-½ ½-15	organic material, decomposed leaves, peat. varved clay and light brown silt; varves approximately 1/4 inch to 1/2 inch thick at top, 3/4 inch to 1 inch thick at bottom.

TABLE 21
OBSERVATION WELL DATA
ALBANY RIVER BASIN

Observation Well No.: 43-05-001-1R
Observer: OWRC.
Location: 50°20'N ; 87°05'W.
Elevation: 998.92' (assumed elevation of BM 1000 ft)
Type: Slotted pipe, 2" inside diameter.
Aquifer or geological material: Silt and clay.
Depth: 126 feet.
Recording commenced: June 20, 1969.
Measuring point: Top of casing 2.92 feet above ground level.

Average daily water levels from land surface.

1969

Day	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
1							25.41	25.16	25.84	26.28	26.60	
2							25.41	25.17	25.85	26.30		
3							25.40	25.18	25.86	26.32		
4							25.38	25.18	25.87	26.33		
5							25.38	25.21	25.87	26.33		
6							25.38	25.23	25.87	26.33		
7							25.38	25.23	25.88	26.34		
8							25.37	25.25	25.91	26.34		
9							25.28	25.28	25.94	26.34		
10							25.26	25.31	25.96	26.38		
11						26.06	25.26	25.34	25.97	26.41		
12							25.26	25.35	25.98	26.40		
13							25.26	25.35	26.00	26.40		
14							25.26	25.36	26.00	26.40		
15							25.18	25.37	26.05	26.40		
16							25.18	25.39	26.07	26.40		
17							25.18	25.41	26.14	26.41		
18							25.18	25.49	26.16	26.45		
19							25.18	25.49	26.17	26.46		
20						25.64	25.18	25.52	26.17	26.47		
21						25.64	25.18	25.56	26.18	26.48		
22						25.64	25.18	25.57	26.18	26.53		
23						25.64	25.17	25.59	26.18	26.53		
24						25.64	25.16	25.61	26.18	26.53		
25						25.64	25.16	25.65	26.19	26.53		
26						25.56	25.16	25.67	26.19	26.54		
27						25.48	25.16	25.67	26.24	26.56		
28						25.48	25.16	25.68	26.28	26.58		
29						25.46	25.16	25.71	26.28	26.60		
30						25.41	25.16	25.71	26.28	26.60		
31							25.16	25.77				

Observation Well No.: 43-05-001-2
Observer: OWRC.
Location: 50° 20'N ; 87° 05'W
Elevation: 998.92' (assumed elevation of BM is 1000 ft.)
Type: Slotted pipe 2" inside diameter.
Aquifer or geological material: Sandy till
Depth: 60 feet.
Recording commenced: June 20,1969.
Measuring point: Top of casing 2.92 feet above ground level.

Distance to water levels from land surface

1969

Date	Feet
June 20	67.67
Aug. 18	67.84
Nov. 1	67.58

TABLE 21 (continued)
OBSERVATION WELL DATA
ALBANY RIVER BASIN

Observation Well No.: 43-05-007-1
Observer: OWRC.
Location: 50° 20'N ; 87°05'W.
Elevation: 978.32' (assumed elevation of B.M. 1000 ft.)
Type: Slotted pipe 1¼ inches inside diameter.
Aquifer of geological material: Silt.
Depth: 65 feet.
Recording commenced: June 20,1969.
Measuring point. Top of casing 3.77 ft. above ground surface.

Distance of water levels from land surface.
1969

Date	Feet
June 20	46.31
Aug. 18	45.23
Nov. 1	45.38

Observation Well No.: 43-05-007-2
Observer: OWRC.
Location: 50°20'N ; 87° 05' W.
Elevation: 978.30'(assumed elevation of B.M. 1000 ft.)
Type: Slotted pipe 1¼ inches inside diameter.
Aquifer of geological material: Sandy till.
Depth: 128 feet.
Recording method: Automatic recorder Leopold & Stevens A-35.
Records commenced: June20,1969.
Measuring point: Top of casing 460 ft. above ground surface.

Distance of water levels from land surface.
1969

Date	Feet
June 20	46.76
Aug. 18	47.20
Nov. 1	47.70

Observation well No.: 43-05-008-1
Observer: OWRC.
Location: 50°20'N ; 87° 05' W.
Elevation: 999.82'(assumed elevation of B.M. 1000 ft.)
Type: Slotted pipe 1¼ inches inside diameter.
Aquifer of geological material: Sand and silt.
Depth: 29 feet.
Recording commenced: Aug.18, 1969.
Measuring point: Top of casing 4.30 ft. above ground level.

Distance of water levels from land surface.
1969

Date	Feet
Aug.18	24.70
Nov. 1	24.70

TABLE 21 (continued)
OBSERVATION WELL DATA
ALBANY RIVER BASIN

Observation Well No.: 43-05-008-2
Observer: OWRC.
Location: 50° 20'N ; 87°05' W.
Elevation: 1000 .04' (assumed bench mark 1000 ft.).
Type: Slotted pipe 1¼ inches inside diameter.
Aquifer or geological material: Clay.
Depth: 67 feet.
Recording commenced: Aug.18, 1969.
Measuring point: Top of casing, 3.70 feet above ground level.

Distance to water levels from land surface.

1969

Date	Feet
Aug.18	25.50
Nov. 1	26.35

Observation Well No.: 43-05-002
Observer: OWRC.
Location: 50°25'N ; 87°08' W.
Elevation: 998.36' (assumed elevation of B.M.is 1000 ft)
Type: Slotted pipe 2 inches inside diameter.
Depth: 41 feet.
Recording commenced: June 20, 1969.
Measuring point: Top of casing 2.83 feet above ground level.

Distance to water levels from land surface.

1969

Date	Feet
June 20	7.43
Aug. 18	7.17
Nov. 1	7.67

Observation Well No.: 43-05-003R
Observer: OWRC.
Location: 50°04'N; 84°08'W.
Elevation:
Type: Slotted pipe 2 inches inside diameter.
Aquifer or geological material: Sand and gravel.
Depth: 120 feet.
Recording commenced: June 19,1969.
Measuring point: Top of casing 3.0 feet above ground level.

Distance to water levels from land surface
1969

Date	Feet
June 19	78.05

TABLE 21 (continued)
OBSERVATION WELL DATA
ALBANY RIVER BASIN

Observation Well No.: 43-05-009
Observer: OWRC.
Location: 50°04'N; 84°08'W.
Elevation:
Type: Slotted pipe 1¼ inch inside diameter.
Aquifer or geological material: Gravel.
Depth: 199 feet.
Recording commenced: June 19, 1969.
Measuring point: Top of casing 3.50 feet above ground level.

Distance to water level from land surface.

1969

Date	Feet
June 19	83.34

Observation Well No.: 43-05-004R
Observer: OWRC.
Location: 51°45'W; 83°55'N.
Elevation: 299.9' above sea level
Type: Open end pipe 2 3/8 inches inside diameter.
Aquifer: limestone.
Depth: 150 feet.
Recording commenced: Aug. 3,1968.
Measuring point: Top of casing.

Distance to water level from land surface.

1968

Date	Feet
Aug. 3	11.90
Oct.28	13.20

1969

Date	Feet
July 1	11.50

Observation Well No.: 43-05-005R
Observer: OWRC.
Location: 51° 43'N; 85° 32' W.
Elevation: 518.90' above sea level.
Type: Open end pipe 2 3/8 inches inside diameter.
Aquifer: Dolomite and limestone.
Depth: 209 feet.
Recording commenced: Aug.29,1968.
Measuring point: Top of casing, 3.00 feet above ground level.

1968

Date	Feet
Aug.28	66.61
Oct.20	62.06

1969

Date	Feet
July 3	58.71

TABLE 21 (continued)
OBSERVATION WELL DATA
ALBANY RIVER BASIN

Observation Well No.: 43-05-006R
Observer: OWRC
Location: 51° 45'N; 86° 11' W.
Elevation: 534.05' above sea level.
Type: Open end pipe 2 3/8 inches inside diameter.
Aquifer or geological material: Siltstone,
Depth: 111.8 feet.
Recording commenced: Sept.2,1968.
Measuring point: Top of casing.

Average daily water levels from top of casing.
1968

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
1										16.59	17.11	16.45
2									16.28	16.59	17.11	16.40
3									16.28	16.59	17.11	16.36
4									16.28	16.59	17.11	16.32
5									16.30	16.59	17.11	16.23
6									16.32	16.66	17.11	16.15
7									16.32	16.72	17.11	16.00
8									16.32	16.67	17.11	15.80
9									16.32	16.82	17.11	15.73
10									16.32	16.82	17.11	15.70
11									16.33	16.82	17.11	15.66
12									16.38	16.82	17.10	15.64
13									16.41	16.82	17.10	15.63
14									16.44	16.82	17.10	15.63
15									16.47	16.82	17.10	15.63
16									16.48	16.82	17.10	15.63
17									16.49	16.87	17.10	15.63
18									16.49	16.91	17.10	15.63
19									16.49	16.94	17.10	15.63
20									16.49	16.96	17.10	15.63
21									16.49	16.98	17.10	15.63
22									16.49	17.00	17.10	15.63
23									16.49	17.02	17.07	15.63
24									16.50	17.02	17.01	15.63
25									16.50	17.02	16.95	15.64
26									16.51	17.05	16.85	15.64
27									16.52	17.08	16.72	15.65
28									16.53	17.10	16.68	15.66
29									16.55	17.11	16.67	15.67
30									16.57	17.11	16.52	15.70
31										17.11		15.74

TABLE 21 (continued)
OBSERVATION WELL DATA
ALBANY RIVER BASIN

Observation Well No.: 43-05-006R.
Observer: OWRC
Location: 51°45'N; 86°11'W.
Elevation: 534.05' above sea level.
Type: Open end pipe 2 3/8 inches inside diameter.
Aquifer or geological material: Siltstone.
Depth: 111.8 feet.
Recording commenced: Sept. 2,1968.
Measuring point: Top of casing.

Average daily water levels from top of casing.

1969

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
1	15.77	16.70	16.90	17.12								
2	15.80	16.71	16.91	17.12								
3	15.83	16.73	16.93									
4	15.86	16.75	16.96									
5	15.89	16.77	16.97									
6	15.92	16.79	17.00									
7	15.96	16.80	17.01									
8	15.98	16.81	17.02									
9	16.07	16.82	17.03									
10	16.12	16.85	17.06									
11	16.19	16.87	17.08									
12	16.25	16.89	17.10									
13	16.30	16.90	17.10									
14	16.35	16.82	17.11									
15	16.40	16.67	17.12									
16	16.45	16.69	17.12									
17	16.48	16.70	17.12									
18	16.45	16.70	17.12									
19	16.39	16.71	17.12									
20	16.40	16.75	17.12									
21	16.45	16.78	17.12									
22	16.49	16.80	17.12									
23	16.55	16.81	17.12									
24	16.55	16.82	17.12									
25	16.56	16.83	17.12									
26	16.57	16.86	17.12									
27	16.59	16.88	17.12									
28	16.60	16.89	17.12									
29	16.61		17.12									
30	16.65		17.12									
31	16.68		17.12									

TABLE 22
OBSERVATION WELL DATA
ATTAWAPISKAT RIVER BASIN

Observation Well No.: 44-05-001R
Observer: OWRC
Location: 51°51'N; 89°36'W
Elevation: 1130.2' (land surface) based on Inland Waters Branch bench mark.
Type: Open end pipe 2 3/8 inches inside diameter.
Aquifer or geological material: Fine and very fine sand with some silt.
Depth: 86.5 feet.
Recording commenced: Aug.23,1967.
Measuring point: Top of casing 3 feet above land surface.

Distance of water levels from land surface.

1969

Date	Feet
Sept.23	40.54

TABLE 23

CHEMICAL ANALYSES OF WATER SAMPLES

ALBANY RIVER BASIN

Source	Latitude North	Longitude West	Date	Temperature (°C)	pH	Constituents in parts per million												Alkalinity as ppm $CaCO_3$		Hardness as ppm $CaCO_3$		Total Dissolved Solids (ppm)	Specific Conductance (micromhos at 25°C)	Colour (Hazen units)	Turbidity (J.T.U. **)
						Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulphate (SO_4)	Chloride (Cl)	Boron (B)	Nitrate (NO_3)	Phosphate (PO_4)	Phenolphthalein	Total	Calcium	Total					
BALKAM CREEK	50°11'	86°43'	11-5-69	4	7.5		0.1							<7.57				0	75.3		85.5		118.0		
			11-5-69	6	7.4		0.1							<7.57					82.1		85.5		120.0		
			14-5-69		7.1		0.1							<7.57					82.1		102.6				
			14-5-69	10	7.3		0.1							<7.57					82.1		102.6		112.0		
			1 8-69				0.02						2	1.5				0	100.0	75.0	100.0			10	10
			8-8-69	7 9			0.05	31	6	2	0.5	98	5	3.0		.02[d]	0.02[c]	0	98.0		102.0		204.0		
			9-8-69	21 6	7.6		0.00						2	2.5			0		97.0	73.0	95.0		190.0	5	12
			12-8-69	20.6	7.5								3				0		100.0	70.0	97.0		190.0		
			13-8-69	17 5													0		90.0	72.0	95.0		190.0		
			13-8-69																97.5	74.0	97.5				
			13-8-69				0.03												96.0						
			14-8-69		8.1																				
			14-8-69	18 3	8.1								3				0.07[c]		96.0	72.5	96.0				
			14-8-69	20 0	8.1		0.03							3.5			1.8[c]		95.5	70.0	95.0		190.0		
BALKAM LAKE (inlet)	50°11'	86°43'	19-8-69		7.44																				
BALKAM LAKE	50 11	86°43	19-8-69		7.5																				
BALKAM LAKE (outlet)	50 11'	86°45'	19-8-69		8.2																				
ALBANY RIVER at Petawanga Lake	1 4	89°..	12-5-69	6	7.55																				
			14-5-69	10	7.20		0.2							<7.57					68.5		68.5		75.5	38	
			13-6-69	14	7.10		0.15							<7.57					34.2		51.3		78.0	35	
			2-7-69	19.5			0.00						1	2.0					40.0	30.0	42.0		80.0	30	13
			21 8-69	19.0																			82.0		
ALBANY RIVER at Big Island	1	81°53'	. 8 69		8.4	1.5[f]	0.03						11	5.0					50.0	40.0	50.0			35	
CAT RIVER	5.°11	91°36'	12-5-69	12.0			0.10																33.0		
			9-8-69	20.0			0.10							<7.57					27.4		34.2		42.4		
CHEEPAY RIVER	53°20	83°30'	5-7 69	14.5	7.18		0.20												27.4		68.5		65.0		
			5-7-69				0.13						1.0	5.0					50.0	20.0	50.0			55	30
			14-8-69	22.5																			160.0		
EABAMET RIVER	51°51'	87°52'	3-5-69	4	7.35		0.10							<7.57					47.8		51.3		56.0		
			5-6-69		7.70		0.13							<7.57					68.5		51.3		84.0	30	
			2-7-69				0.02						2.0	1.5					45.0	32.0	41.0			15	13
FLINT RIVER	5 3	85°37'	9-5-69	3	7.60		0.10							<7.57					68.4		68.5		80.0		
			12-8-69	10	7.77		0.10							<7.57					53.6		85.5		110.0		
HOWARD CREEK *	51	86°43'	8-8-69		7.8		0.10	40	6	2	04		5	1		.02[d]	.02[c]	0	124.0		130.0		234.0		
KAWASHKAGAMA RIVER	52°	87°09'	7-5-69	4	7.37		0.10							<7.57					61.7		68.5		67.5		
			12-5-69	9	7.40																		69.0		
			11-6-69	9			0.10							<7.57					45.6		68.5		84.0		
			22-8-69				0.40							<7.57					68.5		68.5		130.0	20	
KENOGAMI RIVER	50°58'	84 ..	15-6-69		7.0		0.10							<7.57					85.5		68.5		105.0	65	
			3-7-69		7.6		0.10												42.9		68.5		100.0		
			14-8-69				0.13							2.0			0.04[c]		72.0	55.0	75.0			70	
MOBERLY LAKE	49°..	90°35'	7-.-69	8																			21.2		
			12-8-69	14																			37.0		
			14-8-69	21			0.30							<7.57					20.3		17.1		27.2		
MUSWABIK RIVER	51 ..	85°05'	5-7-69		7.23		0.30												41.0		68.5		74.0		
			5-7-69				0.07						3	2.0					40.0	30.0	42.0			130	40
OPICHUAN RIVER	51°10'	87°46'	1-5-69	6	6.85																		73.0		
			14-8-69				0.10							15.2					68.5		68.5		93.5	30	
			13-8-69	22																			101.0		
PASHKOKOGAN RIVER	51°03'	90°12'	20-5-69	8																			33.0		
			10-6-69				0.10							<7.57					27.3		34.2				
			8-8-69	20			0.10							<7.57					27.3		34.2		43.5		

* Indicates analysis performed in the Ontario Water Resources Commission laboratory
** J.T.U. = Jackson Turbidity Unit

a – ortho phosphate
b – meta phosphate
c – total phosphate as P
d – nitrate as N
f – silica as Si

TABLE 23 (continued)

CHEMICAL ANALYSES OF WATER SAMPLES

ALBANY RIVER BASIN

Source	Latitude North	Longitude West	Date	Temperature (°C)	pH	Constituents in parts per million: Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulphate (SO_4)	Chloride (Cl)	Boron (B)	Nitrate (NO_3)	Phosphate (PO_4)	Alkalinity as ppm $CaCO_3$: Phenolphthalein	Alkalinity: Total	Hardness as ppm $CaCO_3$: Calcium	Hardness: Total	Total Dissolved Solids ppm	Specific Conductance micromhos at 25°C	Colour (Hazen units)	Turbidity (J.T.U.**)
ROUND LAKE at Nakina	50°11'	[illegible]	[illegible]		[illegible]																				
WELL SO-1 *	52°10'	81°55'	29-6-69 [illegible]		7.4 9.4	8.6f 1.7f	0.27 [illegible]	103	45	336	10.9		560 68	690 755	0.20	0.02d	0.90c		167 170	260	440 440		2670	15	2 12
WELL [illegible] *	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		430 47	540 585	[illegible]	[illegible]04d	1.00c	0	[illegible] 140	210	[illegible] 370		[illegible]	1	14 9
WELL [illegible] *	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		[illegible] 27	[illegible] 310	[illegible]	[illegible]01d 1	[illegible] 0.02a 0.02b	0	[illegible] 230	160	[illegible] 300	[illegible]	1100	5 5	3 5
WELL SO-4 *	52°10'	81°55'	26-7-69 [illegible]		8.2 [illegible]	8.4 [illegible]	0.10 [illegible]	57	46	255	6.8		49 45	449 440	0.20	0.01d 2	0.01c	0	223 230	190	335 320	1120	1050	10	2 5
WELL [illegible] *	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	33	[illegible]	[illegible]		[illegible] 19	[illegible] 170	[illegible]	[illegible] 0.0	[illegible]		[illegible] 370	120	[illegible] 260	[illegible]	925	[illegible] 20	[illegible] 10
WELL BG-2 *	51°58'	82°29'	26-7-69 [illegible]		7.5 [illegible]	10.8 [illegible]	0.30 [illegible]	208	160	262	5.2		500 350	748 875	0.30	0.01d 3	0.01c	0	181 180	510	1185 1150	2760	1300	10	3 9
WELL PH-1 *	51°54'	82°50'	7-8-69 [illegible]		7.3 [illegible]	12.5f [illegible]	0.75 [illegible]	97	59	308	4.1		5 8	577 90	0.13	0.01d 1	0.17c 0.85a 1.10b	0	350 420	130	488 260	1500	2370 600	10	3 5
WELL PH-2 *	51°54'	82°50'	7-8-69		7.4	13.0	0.45	53	30	135	2.7		5	83	0.12	0.01d	0.33c		435		258	600	1020		4
WELL Norran Island *	51°32'	83°20'	1-9-69		7.7	trace	2.70	142	22	274	4.1		trace	468	0.2	0.01d	0.34c		395		446	1210	2090	20	13

* indicates analysis performed in the Ontario Water Resources Commission Laboratory
** J.T.U. = Jackson Turbidity Unit

a - ortho phosphate
b - meta phosphate
c - total phosphate as P
d - nitrate as N
f - silica as Si

TABLE 24

CHEMICAL ANALYSES OF WATER SAMPLES

SEVERN RIVER BASIN

Source	Latitude North	Longitude West	Date	Temperature	pH	Constituents in parts per million												Alkalinity as ppm $CaCO_3$		Hardness as ppm $CaCO_3$		Total Dissolved Solids	Specific Conductance	Colour	Turbidity
						Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulphate (SO_4)	Chloride (Cl)	Boron (B)	Nitrate (NO_3)	Phosphate (PO_4)	Phenolph thalein	Total	Calcium	Total	(ppm)	(micromhos at 25°C)	(Hazen units)	(J T U **)
				(°C)																					
AGUSK LAKE *	54°41'	89°29'	18-9-69		7.3	1.1	0.10	14.0		1.0	0.3		5.0	1.0		0.01[d]			44		43	55	87		
			18-9-69	6.8	7.8	2.1[f]	0.0	13.6	1.6				2.1	0[c]		7.9	0.10[a] 0.60[b]		48	34	41		83		9
BIG TROUT LAKE *	53°55'	89°58'	8-10-69		7.3	0.65	0.15	18.0		0.6	0.4		5.0	1.0		0.02[d]			56		56	75	109		
BIG TROUT LAKE	53°49'	89°52'	8-10-69	2.2	8.4	1.3[f]	0.03	18.0	3.2				10.0						56	45	59		115		5
DEER LAKE *	52°37'	94°03'	11-9-69		7.5	0.7	0.15	4.0		0.8	0.5		5.0	1.0		0.02[d]			13		11	25	32		
FAVOURABLE LAKE	52°56'	93°54'	11-9-69	12	7.2	2.4[f]	0.0	4.8	1.8				1.8			6.0	0.43[a] 0.80[b]		28	12	20		50		9
*			11-9-69		7.2	1.3	0.30	7.0		0.8	0.5		7.0	1.0		0.01[d]			18		19	35	47		
FAWN RIVER	55°19'	88°21'	12-9-69	6	8.1	2.2[f]	0.04	20.4	2.5				9.0				0.12[a] 0.10[b]		58	51	62		110		8
FLANAGAN RIVER	52°49'	93°27'	24-6-69	13																			56		
				18																			62.5		
				18			0.3							< 7.57					41.1		51.3		61		
KISHIKAS LAKE	52°08'	91°56'	12-9-69	14.5	8.2	3.0[f]	0.03	11.2	1.8				1.0			8.1	0.05[a] 0.0 [b]		41	28	36		70		5
					7.2	2.9	0.25	11.0		1.0	0.6		5.0	1.0		0.01[d]			37		36	40	70		
MATTSON LAKE *	52°19'	92°47'	11-9-69	12.6	7.2	1.8[f]	0.04	5.6	2.5				3.1			9.7	0.19[a] 0.46[b]		34	14	25		50		17
					7.2	1.3	0.30	7.0		0.8	0.5		7.0	1.0		0.01[d]			22		24	35	47		
MICHIKAN LAKE	53°55'	90°58'	11-9-69	13	8.2	2.6[f]	0.09	22.0	3.2				3.0			17.6	0.26[a] 0.50[b]		52	55	71				13
MORRISON RIVER	53°48'	91°50'	22-5-69	8			0.20							< 7.57					41.4		34.1		47.2		
			27-5-69	16.5																			77		
				21																			107		
MUSKRAT DAM LAKE *	53°26'	91°41'	12-9-69		7.1	3.3	1.75	13.0		1.0	1.0		11.0	1.0		0.06[d]			44		44	50	84		
NIKIP LAKE *	52°52'	91°56'	12-9-69		7.1	2.2	0.35	14.0		1.0	0.6		5.0	1.0		0.01[d]			46		46	50	87		
				11	8.0	2.7[f]	0.0	12.8	2.8				7.0			6.1	0.03[a]		49	32	44		83		2
NORTH CARIBOU LAKE *	52°48'	90°36'	12-9-69		7.2	2.6	0.10	12.0		0.7	0.5		5.0	1.0		0.01[d]			40		40	45	78		
NORTH SPIRIT LAKE	52°31'	93°01'	27-9-69	8	7.4	3.0[f]	0.30	8.4	1.6				13.0			3.9	0.10[a] 0.41[b]		29	21	28		55		25
OPASQUIA LAKE	53°17'	93°36'	11-9-69	12	8.4	2.9[f]	0.05	20.0	4.1				32			25.5	0.22[a] 0.10[b]		44	50	78		120		148
SACHIGO RIVER	53°43'	92°17'	21-5-69				0.2							< 7.57					41.0		51.3				
			21-6-69	10																			67		
			16-7-69	18																			105		
SACHIGO LAKE	53°47'	92°16'	11-9-69		6.9	3.5	1.40	19.0		1.0	0.7		9.0	1.0		0.02[d]			62.0		62.0	80	125		
SACHIGO LAKE OUTLET	54°00'	92°09'	21-5-69	4			0.2							< 7.57					47.8		51.3		66		
			19-6-69	9			0.2							< 7.57					54.8		51.3		73		
			17-7-69	18																			105		
			13-8-69	22			0.1							< 7.57					61.5		68.4		119		
SANDY LAKE	53°03'	93°20'	11-9-69	12.5	8.1	2.7[f]	0.09	14.0	3.0				8.0						47	35	48		115		140
SCHADE RIVER	53°33'	91°03'	20-6-69				0.1							< 7.57					51.4		34.2				
			16-7-69	19																			67		
				22			0.1							< 7.57					41.1		51.3		75		
SEVERN RIVER	53°21'	91°46'	8-7-69		7.4	9.5	0.85	66.0	16.0	2.4	4.8		51.0	1.0	0.05	0.06[d]	0.04[c]		41		40		85	50	5.6
SEVERN RIVER	55°05'	88°58'	18-9-69	7.2	8.4	3.0[f]	0.26	15.6	2.8				14.0	0.0		8.0	0.32[a] 0.30[b]		48	39	51		98		53
SEVERN RIVER	55°24'	88°16'	11-8-69	22			0.1[							< 7.57					68.4		68.4		190		
			18-9-69		7.2	3.3	0.90	24.0		2.0	0.3		5.0	2.0		0.01[d]			74.0		74.0	135	144		
SEVERN RIVER	55°27'	88°09'	18-9-69	6.8	8.2	3.0[f]	0.18	19.6	2.3				5.0						66	49	59		115		21
SEVERN RIVER	55°59'	87°38'	18-9-69	6.8	8.1	2.9[f]	0.19	21.2	3.7				11.0			9.5	0.10[a] 0.32[b]		70	53	69		138		37

* Indicates analysis performed in the Ontario Water Resources Commission Laboratory

** J T U = Jackson Turbidity Unit

a – ortho phosphate
b – meta phosphate
c – total phosphate as P
d – nitrate as N
f – silica as SI

TABLE 24 (continued)

CHEMICAL ANALYSES OF WATER SAMPLES

SEVERN RIVER BASIN

Source	Latitude North	Longitude West	Date	Temperature (°C)	pH	Constituents in parts per million: Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulphate (SO_4)	Chloride (Cl)	Boron (B)	Nitrate (NO_3)	Phosphate (PO_4)	Alkalinity as ppm $CaCO_3$: Phenolphthalein	Alkalinity as ppm $CaCO_3$: Total	Hardness as ppm $CaCO_3$: Calcium	Hardness as ppm $CaCO_3$: Total	Total Dissolved Solids (ppm)	Specific Conductance (micromhos at 25°C)	Colour (Hazen units)	Turbidity (J.T.U. **)
SOUTH TROUT LAKE	52°53'	93°42'	27-9-69	9.5	8.2	1.5[f]	0.03	12.4	4.1				8.0						50	31	49		110		5
TWO RIVERS LAKE *	53°48'	91°32'	11-9-69		6.8	2.5	0.35	18.0		1.0	0.4		7.0	3.0		0.01[d]			60		61	85	120		
WEAGAMOW LAKE	52°56'	91°17'	27-9-69	7.8	8.4	2.7[f]	0.02	13.2	2.5				9.0						45	33	44		90		7
WINDIGO LAKE	52°33'	91°33'	11-9-69	11.0	8.0	2.4[f]	0.04	16.0	3.5				8.0			9.5	0.28[a] 0.26[b]		47	40	55		90		9
WELL MT-2 *	53°21'	91°50'	8-7-69		7.5	2.7	4.0	12.0	2.0	2.3	0.5		190	1.0	0.00	0.01[d]	0.60[c]		232		226		410	5	16
WELL PT-1	53°21'	91°47'	30-6-69		7.4		9.5						2.0	2.0					262		224				
WELL PT-3	53°20'	91°48'	13-8-69		7.5		8.5						3.0	1.0					262		233				
WELL PT-4	53°19'	91°51'	21-8-69		7.5		21.0						7.0	2.0					274		250				

* Indicates analysis performed in the Ontario Water Resources Commission Laboratory
** J.T.U. = Jackson Turbidity Unit

a - ortho phosphate
b - meta phosphate
c - total phosphate as P
d - nitrate as N
f - silica as Si

TABLE 25

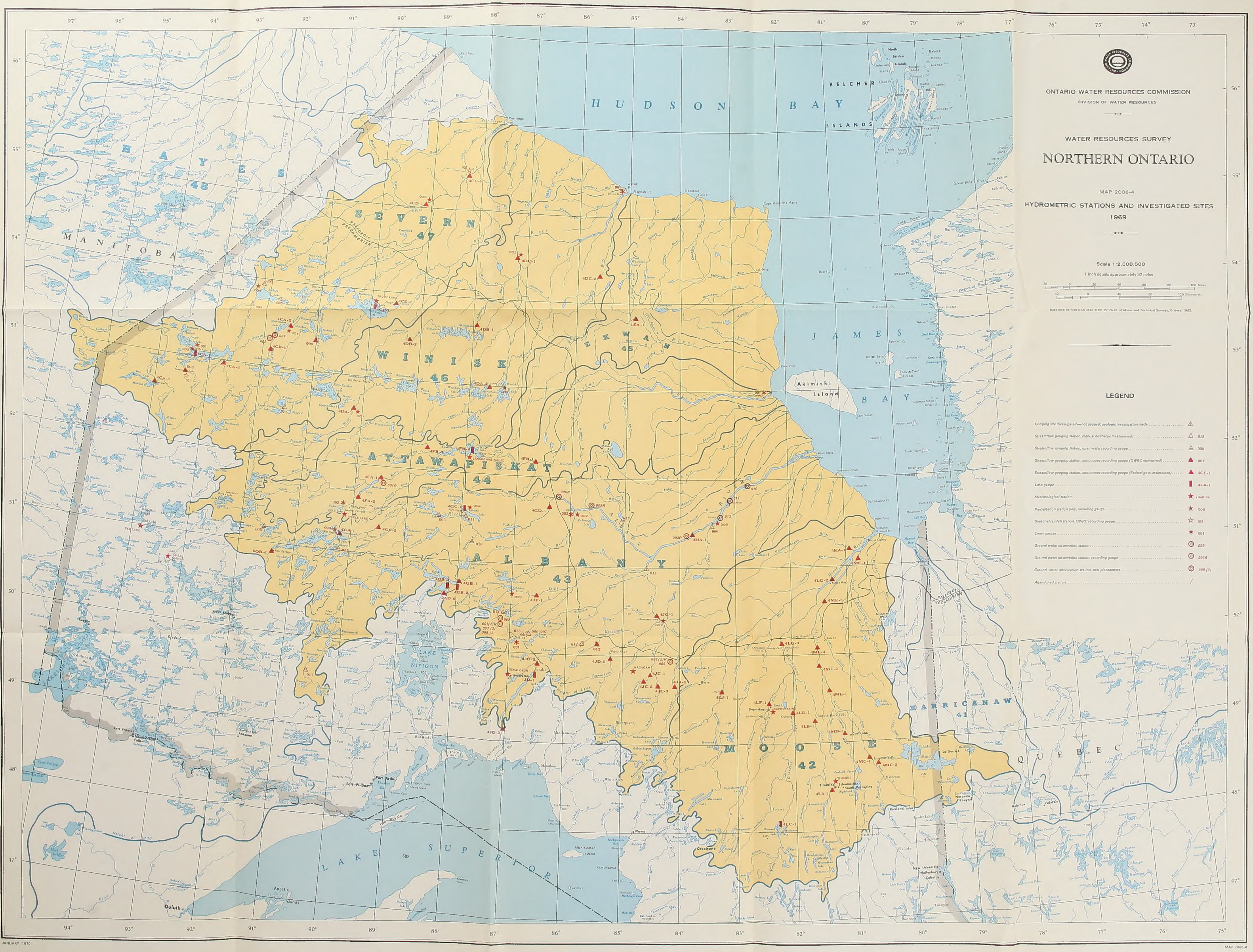
CHEMICAL ANALYSES OF WATER SAMPLES

WINISK RIVER BASIN

Source	Latitude North	Longitude West	Date	Temperature	pH	Constituents in parts per million												Alkalinity as ppm $CaCO_3$		Hardness as ppm $CaCO_3$		Total Dissolved Solids	Specific Conductance	Colour	Turbidity
						Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulphate (SO_4)	Chloride (Cl)	Boron (B)	Nitrate (NO_3)	Phosphate (PO_4)	Phenolphthalein	Total	Calcium	Total	(ppm)	(micromhos at 25°C)	(Hazen units)	(J.T.U. **)
				(°C)																					
KINGFISHER LAKE	53°03'	89°48'	13-9-69	8.3	8.2	2.7[f]	0.10	16.0	3.2				7.5			5.9	0.04[a] 0.09[b]		59	40	54		80		8
LONGDOG LAKE*	53°26'	89°12'	13-9-69		7.2	3.1	0.15	18.0		0.9	0.4		5.0	1.0		0.01[d]			58		58	75	110		
MAMEIGWESS LAKE*	52°34'	87°54'	13-9-69		7.1	2.2[5]	0.15	19.0		1.7	0.8		5.0	1.0		0.01[d]			63		61	85	116		
			13-9-69	10	8.4	2.6[f]	0.06	17.2	4.6				1.8			1.0	0.02[a] 0.03[b]		66	43	63		110		3
MAWLEY LAKE	52°21'	90°47'	12-9-69	12.2	8.1	3.0[f]	0	12.8	1.6				8.0			7.9	0.12[a] 0.11[b]		48	32	39				4
MISAMIKWASH LAKE*	53°01'	89°56'	13-9-69		7.2	2.5	0.25	14.0		1.0	0.4		5.0	1.0		0.01d			49		45	65	85		
			13-9-69	8.3	8.0	3.0[f]	0.01	12.8	3.2				2.2			9.5	0.21[a] 0.15[b]		51	32	46		80		8
OBABIKA LAKE*	51°52'	90°55'	12-9-69		7.2	2.8	0.25	9.0		0.9	0.2		5.0	1.0		0.01[d]			27		30	40	54		
PEEAGWON LAKE*	52°23'	88°49'	13-9-69		7.3	0.6	0.90	9.0		0.7	0.3		8.0	1.0		0.01[d]			28		27	40	54		
SHAMATTAWA RIVER*	54°12'	85°41'	30-9-69		7.3	2.1	0.55	18.0		3.0	0.3		7.0	4.0		0.01[d]			52		52	65	109		
WAPIKOPA LAKE	52°56'	88°10'	13-9-69	11	8.2	2.8[f]	0.05	18.4	2.5				9.0			7.8	0.15[a] 0.10[b]		57	46	57		115		8
WINISK LAKE	52°59'	87°16'	13-9-69	11	8.1	2.7[f]	0.05	17.2	2.1				8.0			12.1	0.18[a] 0.22[b]		51	43	52		95		7
WINISK RIVER*	54°02'	87°06'	1-10-69		7.4	1.45	0.40	10.0		1.0	0.2		7.0	1.0		0.01[d]			27		31	35	57		
			1-10-69	3.2	8.3	3.0[f]	0.0	14.0	2.8				2.0			8.0	0.29[a] 0.9[b]		52	35	41				19
WINISK RIVER	54°44'	87°17'	1-10-69	3.2	8.1	2.4[f]	0.08	15.2	2.8				10.0						46	38	50				18
WINISK RIVER	55°16'	85°12'	1-10-69		7.3	2.1	0.50	20.0		4.0	0.5		5.0	7.0		0.01[d]			59		58	90	122		
WUNNUMMIN LAKE	53°32'	88°36'	13-9-69	10	7.9	3.0[f]	0.08	13.6	2.8				9.0			8.0	0.10[a] 0.12[b]		41	34	46		80		17

* Indicates analysis performed in the Ontario Water Resources Commission Laboratory
** J.T.U. = Jackson Turbidity Unit

a - ortho phosphate
b - meta phosphate
c - total phosphate as P
d - nitrate as N
f - silica as Si


ONTARIO WATER RESOURCES COMMISSION
DIVISION OF WATER RESOURCES
WATER RESOURCES SURVEY
NORTHERN ONTARIO
MAP 2006-4
HYDROMETRIC STATIONS AND INVESTIGATED SITES
1969
Scale 1:2,000,000
1 inch equals approximately 32 miles
Base map derived from Map MCR 30, Dept. of Mines and Technical Surveys, Ottawa, 1962.
LEGEND
Gauging site investigated — not gauged; geologic investigation made
Streamflow gauging station, manual discharge measurement 018
Streamflow gauging station, open water recording gauge 006
Streamflow gauging station, continuous recording gauge (OWRC maintained) 007
Streamflow gauging station, continuous recording gauge (Federal govt. maintained) 4CE-1
Lake gauge 4LA-1
Meteorological station NAKINA
Precipitation station only, recording gauge 005
Seasonal rainfall station, OWRC recording gauge 001
Snow course 001
Ground water observation station 009
Ground water observation station, recording gauge 003R
Ground water observation station, two piezometers 008 (2)
Abandoned station
HUDSON BAY
JAMES BAY
BELCHER ISLANDS
Akimiski Island
HAYES 48
SEVERN 47
WINISK 46
EKWAN 45
ATTAWAPISKAT 44
ALBANY 43
MOOSE 42
HARRICANAW 41
MANITOBA
QUEBEC
LAKE NIPIGON
LAKE SUPERIOR
JANUARY 1970
MAP 2006-4